"LONG-RUN PERFORMANCE OF INITIAL PUBLIC OFFERINGS (IPOs) IN THE SPANISH CAPITAL MARKET"[*]

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ABSTRACT

Academic research into firms that have gone public has been focused on the study of two anomalies: initial underpricing and long-run underperformance. The first aim of this study is to analyse all the Spanish Initial Public Offerings(IPOs) during the period 1987-1997, with a sample consisting of 56 firms, in order to provide additional evidence on the long-run performance of IPOs. Nevertheless, since several works have reported the existence of a relationship between the two anomalies of the IPOs –short-run underpricing and long-run underperformance– we have also analysed the initial returns of the IPOs.

There is considerable variation in the measures of abnormal returns and the statistical tests that empirical researchers use to detect long-run abnormal stock returns. In fact, several recent works –for example, Barber and Lyon (1997) and Lyon *et al.* (1999)- have revealed that the method for calculating returns influences both the magnitude of the measured abnormal return as well as the size and power of the statistical tests. In our study, following these works, we have used different methods, in order to examine the robustness of the long-run performance of the IPOs regarding various specifications of the model: buy-and-hold returns (BHR), calendar-time portfolios and the Fama and French three-factor model. In buy-and-hold returns and calendar-time portfolios, we have used different benchmarks: a value-weighted market index (IGBM), an equal-weighted market index, size and/or book-to-market portfolios, as well as a control firm selected in terms of the above criteria. The results of the study show that the existence of long-run underperformance for the Spanish IPOs depends on the methodology used. Thus, there exists long-run underperformance when buy-and-hold returns are used and not when mean calendar-time returns (monthly) are employed. This result is in line with the evidence presented by Brav *et al.* (2000) in reference to the fact that the use of BHRs tends to magnify the long-run underperformance of IPOs.

The study of the influence of the IPO prospectus information on the long-run performance of the firm is the second objective of this work. We analyse whether investors can use this information to distinguish firms with good or bad long-run performance. The results show that neither the characteristics of the IPO –size of the issue, the underwriter´s reputation– nor those of the firm in the year prior to going public –size, return on assets– have a statistically significant influence on the stock return of the firm three or five years after going public. On the other hand, the percentage of stocks retained in the offer, the initial underpricing of the IPO and the number of seasoned equity offerings (SEOs) made since going public to the end of the study period are variables that are directly related to the long-run performance of the IPOs. This result confirms the signalling hypothesis for the explanation of the initial underpricing and the long-run underperformance of IPOs in the Spanish capital market.

Key words: Initial Public Offering (IPO), underpricing, underperformance, long.run return and IPO prospectus.

JEL: G10, G12 and G14.

1. INTRODUCTION

Works that have analysed firms´ going public have revealed, with more or less homogeneity, the existence of two anomalies. First, the existence of a high initial returns on Initial Public Offerings (IPOs) has been reported at an international level. That is, on average the shares of firms that have gone public have been offered to investors at prices considerably lower than the price that they later trade at on the stock market[1]. Following the works of Ibbotson (1975) and Ritter (1984), numerous researchers have revealed that in different countries and at different moments in time the phenomenon of the underpricing of IPOs is a generalised phenomenon. Thus, Table 1 compiles some of the works that have analysed the initial returns of going public and their results.

INSERT TABLE 1

Second, more recently, different studies have analysed the long-run performance of IPOs. This analysis has consisted in comparing the returns of the IPOs following their flotation[2] with the returns provided by other firms or portfolios of firms that have not carried out a flotation, giving rise to the second of the anomalies attributed to IPOs which consists in that these usually present lower long-run returns than those of firms that have not gone public. That is, investors seem to obtain losses due to holding shares of the firms that have recently carried out an IPO compared to those firms that have not done so. Taking as a starting point the work of Ritter (1991), a series of studies have revealed the existence of negative long-run abnormal returns for firms at five years following the IPO. This phenomenon has been reported in both the USA and other markets.

Less evidence exists regarding the analysis of characteristics that enable the identification of the good or bad long-run performance of IPOs. Bhabra and Pettway (2000) have analysed the usefulness of the IPO prospectus information concluding that the characteristics of firms such as size, R+D spending, and free cash flow are more significant than the characteristics of the offer when predicting the long-run performance of IPOs.

This paper has a twofold aim. On the one hand, to analyse the long-run performance of the Spanish IPOs made during the 1987-1997 period. On the other hand, the study of the influence of the IPO prospectus information regarding the long-run returns of the IPO constitutes the second objective of this work.

The initial returns of Spanish IPOs have been analysed by a series of authors such as Freixas and Inurrieta (1991), Rahnema *et al.* (1993), Arcas and Ruiz (1999), Ansotegui and Fabregat (1999) and Álvarez (1999). A summary of these works and of the results obtained are presented in Table 2. In general,

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[1] This initial return has been estimated, generally, by comparing the closing price of the first day's trading with the issue price of the stocks.

[2] Although with variations the periods most frequently used were generally 1, 3 and 5 years.

the cited works reveal the existence of positive initial returns, that can be situated at around 11%, in line with the evidence reported in other countries. In turn, Planell (1995) analyses the determinants and effects of going public in Spain.

INSERT TABLE 2

Evidence on the long-run performance of IPOs in Spain is more limited. Farinós (1999) analyses the long-run returns of a sample made up of 18 IPOs and 24 SEOs made by Spanish firms between 1993 and 1997. Ansótegui and Fabregat (1999) analyse the long-run performance of the IPOs taking as a benchmark a market index and an industrial index. In this context, the present work analyses the long-run performance of the IPOs that took place at the Madrid Stock Exhange between 1987 and 1997 –the sample is made up of a total of 56 firms– using for this different measures of long-run performance and different benchmarks for the calculation of abnormal returns.

The rest of the work is structured in the following way: in the next section we discuss the previous evidence concerning the long-run performance of IPOs, as well as the main methodology questions that affect the measure of long-run returns. Section 3 analyses the possible influence of the information contained in the prospectus deposited in the Comisión Nacional del Mercado de Valores (C.N.M.V.–Spanish Security and Exchange Commission) on the long-run performance of the IPO. Section 4 presents the database under study and its fundamental characteristics. The different methodologies used to estimate the long-run returns are commented on in Section 5. The results obtained are presented in Section 6 for underpricing, in Section 7 for those referring to long-run performance and in Section 8, for the effect of the information in the IPO prospectus on the long-run performance of the IPO. The main conclusions of the study are drawn in the final section.

2. LONG-RUN RETURNS OF THE IPOS

Ritter (1991) reports the long-run low returns –in the first three years of trading– on the stocks of those firms that carry out IPOs, compared to those obtained by firms that have not performed IPOs. In particular, the strategy consisting in investing in IPOs at the end of the first day´s trading and holding them for three years would produce a wealth of 83% compared to that obtained investing during the same period in a group of control firms belonging to the same sector and with a similar market value[3]. Ritter suggests that these low long-run returns of IPOs is in line with the going public of many firms coinciding with the existence of a relevant interest in certain sectors, that implies that investors can be periodically over-optimistic regarding the potential profits of new firms.

The evidence contributed by Ritter (1991) seems to be internationally applicable following the works by Levis (1993) and Aggarwal *et al.* (1993), that report that the low long-run returns of IPOs is not a phenomenon unique to

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[3] The returns obtained three years after going public is 34.47% for IPOs, whereas these reach a value of 61.86% for the control sample (Ritter, 1991).

the United States, but is also applicable to countries such as Great Britain, Chile or Mexico. Table 3 summarises some of the works that have analysed the long-run performance of IPOs and their results, showing that with the exception of the cases of Sweden and Korea that present positive abnormal returns, the rest of the studies reveal that the returns of the IPOs, adjusted for the return of the market or for the return of firms' portfolios that are homogeneous in terms of some characteristic, are negative. Consequently, despite the fact that IPOs represent exploitable investment opportunities if the stocks are purchased at the price set in the initial offer, the empirical evidence seems to reveal that they should not be held in the long run.

INSERT TABLE 3

Recently, the analysis of the long-run returns is directed towards a methodological approach. Thus, Barber and Lyon (1997), Kothari and Warner (1997), Lyon *et al.* (1999), Fama (1998) and Loughran and Ritter (2000) have argued that the method of performance measurement influences both the magnitude of the abnormal returns as well as the size and power of the statistical test. In this context, Brav *et al.* (2000) have revealed that there do not exist low long-run returns of the IPOs. Thus, these firms obtain long-run returns that are similar to those obtained by firms that have not gone public if the comparison is made in terms of size and book-to-market ratio of firms. This result reveals that the return patterns of firms that have carried out IPOs are not different to those of firms that have not done so and that the results found in previous works are motivated by the long-run returns measures used.

There exist diverse methodological questions that affect the estimation of long-run returns:

❑ *Use of cumulative abnormal returns (CARs) or buy-and-hold returns (BHR)[4]*. Barber and Lyon (1997), Lyon *et al.* (1999), Kothari and Warner (1997) and Fama (1998) analyse the alternatives used for the measure of abnormal returns, although there is no consensus as to the preferred method. Some of these works –for example, Fama (1998)– justify the use of cumulative abnormal returns (CARs) since it would produce fewer spurious rejections of market efficiency than the use of buy-and-hold returns calculated from compounding monthly returns in a single period. There also exists a greater knowledge of the distribution properties and the statistical tests for CARs. Thus, Brav *et al.* (2000) state that buy-and-hold returns tend to over-estimate the long-run underperformance of IPOs. However, Barber and Lyon (1997) emphasise the advantage of BHRs for measuring the investor´s experience, as the use of mean monthly calendar-time returns or their sum (cumulative returns) does not adequately measure the returns obtained by an investor who holds a stock for a long period of time. According to these authors, the returns obtained by an investor in the long run are better approximated by the compounding of the simple returns in the short run. They also state that cumulative abnormal

[4] This is the return obtained by an investor as a consequence of a strategy consisting in buying stocks at the end of the first day´s trading and holding them for a period of time.

returns are a biased predictor of BHRs. This work, and given that there does not exist consensus as to the approach, uses both buy-and-hold returns when comparing the long-run returns of IPOs with those of the different benchmarks used –market indexes, firm portfolios and control firms– and cumulative abnormal returns when using the Fama and French three-factor model(1992, 1993) or constructing calendar time –monthly– portfolios.

❑ *Value-weight or equally-weighted portfolios*. Loughran and Ritter (2000) show that the choice of the weighting method is a relevant question. If the interest is focused on quantifying the change in the average wealth of the investor as a consequence of a certain event, the correct method would be value weighting. However, if the interest lies in the implications of a potential stock market mispricing, a method based on equally weighted returns would be more appropriate. In order to give the greatest possible robustness to the results obtained we have used both weighting schemes.

❑ *Use of portfolios or control firms*. Barber and Lyon (1997) state that the use of control firms of a similar size and book-to-market value produces well specified statistical tests in all the situations considered. Besides, they observe significant biases in the statistical tests when the abnormal returns are estimated using a portfolio as a benchmark, as for example a market index. The biases in the statistical tests are due to three reasons: new listing bias, rebalancing bias and skewness bias[5]. These biases are not present when comparing each firm that performs an IPO with another firm which is similar in size and book-to-market value and that has not carried out an IPO. Nevertheless, we have also used for the calculation of the abnormal returns, size and book-to-market portfolios. In the latter case, and in order to avoid the bias of a new listing bias we have excluded firms that had performed an IPO for the construction of portfolios. Besides, the skewness in the abnormal returns is more marked when the BHRs are calculated. For this reason, we use time series of returns[6] when applying the three-factor model proposed by Fama and French (1992, 1993) or constructing the –monthly– calendar-time portfolios.

❑ *Cross-sectional correlation of returns*. Brav (2000) reveals that the series of long-run returns are not independent since there exists a time coincidence of the returns and this can lead to a poor specification of the statistical tests. In turn, Fama (1998) and Lyon *et al.* (1999) state that the use of methods that take into account time series of returns eliminates the problem of cross-sectional correlation between the firms in the sample since the returns are aggregated in portfolios and

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[5] The new listing bias arises since the portfolios used as a benchmark include firms that have a short trading history in the stock market and these stocks tend to present low abnormal returns (Ritter, 1991). The rebalancing bias arises because the compounding of the returns on the portfolio assumes a periodical rebalancing of the portfolio weightings, whereas the returns of the firm that carries out an IPO are compounded without rebalancing. In this sense, Canina *et al* (1996) show that the rebalancing bias is more marked when using daily and not monthly returns. Finally, the skewness bias refers to the fact that a skewed distribution of the abnormal returns, prompted by the presence of extreme values in the returns of the firms in the sample, the distribution of the Student´s t test is skewed with a mean less than one.

[6] That is, returns without compounding to obtain BHRs.

produce more robust statistical tests in non random samples. For these reasons, two methods have been used that group the returns of the IPOs in calendar-time portfolios. These two methods are: the Fama–French three-factor model and the construction of monthly –calendar-time portfolios.

In short, just as pointed out by Fama (1998), all the methods used for the estimation of abnormal returns are subject to problems arising from the poor specification of the models and no method is able to minimise these problems for all classes of events. Even close models, such as the Fama-French three-factor model and benchmarks matched on size and book-to-market ratio, since they both control for variations in the returns motivated by these two variables, give rise to different estimations of the abnormal returns (Fama, 1998). In this work we have opted to use a wide range of methodologies and variations of these, in order to give the greatest possible robustness to the estimations.

3. PREDICTION OF LONG-RUN PERFORMANCE OF IPOS

Diverse works[7] have analysed the influence of the characteristics of going public on the underpricing of IPOs, revealing that the variables concerning both the offer –the underwriter´s reputation, offer size, time of issue– and the firm –sales, number of subsequent SEOs, level of debt, age– have an influence on the level of underpricing. In turn, Jain and Kini (1994) examined the operating performance of the firms that had recently gone public, stating that the post-IPO operating performance is lower than pre-IPO one. This result is consistent with the low long-run returns of IPOs.

The going public of firms presents a high component of information asymmetry between investors and issuers. Rao (1993) states the scarcity of methods contributing information on the firms in the years prior to the IPO[8]. This lack of information on the issuer obliges the investors to trust in the information compiled in the IPO prospectus. Nevertheless, few studies have researched the usefulness of the information provided in the issue for evaluating the long-run performance of the IPO.

In the Spanish capital market, before performing an IPO, firms have to draw up a detailed information prospectus that has to be approved by the Spanish Securities and Exchange Commission (Comisión Nacional del Mercado de Valores -C.N.M.V.) and that is valid for six months. This prospectus provides information on the offer itself, the operating and financial history of the firm, the accounting information at the end of the year prior to the IPO, the firm´s ownership structure and the risks associated to the new investments of the firm. In particular, the information prospectus of an IPO contains the following parts:

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[7] See Ibbotson *et al.* (1988), Jegadeesh *et al.* (1993), Carter and Manaster (1990) and Michaely and Shaw (1994 and 1995).

[8] Compiled in Teoh *et al.* (1998).

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- ❑ Chapter I: People assuming legal responsibility for the prospectus.

- ❑ Chapter II: Information on the value of the issue.

- ❑ Chapter III: General information on the firm.

- ❑ Chapter IV: Information on the activity of the firm.

- ❑ Chapter V: Economic-financial information of the firm.

- ❑ Chapter VI: Representation, management and control of the firm

- ❑ Chapter VII: Recent evolution and future perspectives of the firm.

The information prospectus is a legal document that protects the issuer and the underwriter, as this is written proof that the investor was provided with all the information concerning the offer. Despite the fact that the investors know that the most accurate information on the issuing firm is found in the information prospectus, Bhabra and Pettway (2000) point out that there can exist certain scepticism as to the value of its information content due to the scarce operating history of the firms that carry out the IPO. However, this problem is less relevant in the Spanish capital market, as compared to the USA market, the firms that carry out an IPO usually have a longer operating history[9].

In this work we examine the usefulness of the accounting information for the year prior to the issue and of the characteristics of the offer contained in the information prospectus, in order to determine the long-run success or failure of an IPO; defining success or failure as the existence of positive or negative long-run returns adjusted for normal or expected returns. Our objective is to determine whether the information contained in the IPO prospectus can be adequately used by an investor to develop a strategy of investing in an IPO over an investment horizon. We have examined the value of the information contained in the prospectus to identify the firms that obtained good and bad performance in the 3 and 5 years following the IPO. In particular, we have researched the usefulness of the following information contained in the prospectus:

- ❑ Accounting information on the operating and financial performance: size of the firm, returns on assets, return on equity, level of debt, market-to-book ratio and earnings.

- ❑ Information on the offer itself: size of the offer, percentage of shares issued and reputation of the underwriter.

- ❑ Other information: age of the firm, sector of activity, time of issue, initial returns of the IPO and number of SEOs made by the firm from the IPO to the end of the study period.

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[9] The average age of the firms that carry out an IPO in Spain is 33 years compared to the 12.5 years (mean) and 6 years (median) reported by Ritter (1991) for the US market. This fact can be generalised to Continental Europe just as compiled by Loughran et al. (1994) when stating that firms that go public in Continental Europe are more mature and larger than those of the United States or the United Kingdom.

4. DATABASE

Our database is made up of 56 of the 58 IPOs performed on the Madrid Stock Exchange from 1987 to 1997, inclusive[10]. The data used come from the IPO prospectuses drawn up by firms in order to request their listing on the Stock Exchange and have been provided by the Madrid Stock Exchange for the issues taking place between 1987 and 1989 and by the Spanish Securities and Exchange Commission (CNMV) for the years after 1989. The firms making up the database are listed in Table 4, in which we indicate the date of going public and the sector to which they belong according to the classification made by the Madrid Official Stock Exchange Bulletin.

INSERT TABLE 4

Following the Seventies crisis that caused a considerable reduction in the amount of firms that launched themselves on the Stock Exchange, an economic recovery take place that prompted firms to go public. IPOs become an habitually used exchange listing access mechanism in 1989 and, from 1992 onwards, practically all the exchange flotations are IPOs. Spanish firms, in their majority, resorting to IPOs, specially from the coming into effect on July 28th of the Securities Market Law 24/1988 aim to achieve greater penetration and liquidity, bearing the greater costs that this method requires. Most of the issues are concentrated in the period 1989/1991, whereas from 1991 onwards the number is progressively reduced, beginning to rise again in 1997. This concentration of IPOs in relatively short periods of time, after which there are years in which the number of IPOs is minimal, is not a situation exclusive to Spain and has been reported for various countries[11].

The IPOs in Spain are carried out by firms with an average operating history of 33 years, understanding as such the time elapsed since the firm's foundation –data that appears in the prospectus– to the time of its listing on the Stock Exchange (Table 5). This feature coincides with the evidence contributed by Loughran *et al.* (1994), who in their comparative study of the IPOs performed in 25 countries, show that in the countries of Continental Europe, most of the firms that enter the market are more mature, larger and more established than those of the United States or the United Kingdom. The average age of the firms that carry out IPOs in Continental Europe is 50 years, which contrasts with the case of the USA where firms carrying out an IPO have an average of 6 years' operating history (Loughran *et al.*, 1994).

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[10] We have excluded the Corporación Financiera de Servicios (Cofiser) and GDS Leasinter as we do not have available the stock prices data necessary for obtaining the post-IPO stock returns at least in one of the three investment horizons considered (1, 3 and 5 years).

[11] See Ritter (1984b), who analyses the IPOs in the United States in the period 1960/82, observing that these were much more numerous during the years 1960/61, 1968/73 and 1980/81 than in 1962/67 and 1973/79. In European economies, Loughran *et al.* (1994) show this particular evolution of IPOs in the United Kingdom (1985/88), Italy (1986/87) and France (1985/87) among other countries.

5. METHODOLOGY

Stock returns are calculated for two intervals:

❑ At the initial moment, defined as the return obtained by an investor who buys shares in the offer and sells them at the closing price of the first day´s trading.

❑ Long-run returns of the IPOs of shares, for which three investment horizons are set at 12, 36 and 60 months after the first day´s trading[12].

There is a considerable variation in the measures of abnormal returns and the statistical tests that empirical researchers use to detect long-run abnormal stock returns. Recently, Barber and Lyon (1997), Kothari and Warner (1997), Lyon *et al.* (1999), Fama (1998), Loughran and Ritter (2000) and Brav *et al.* (2000) have shown that the method of performance measurement influences both the magnitude of the measured abnormal performance as well as the size and power of the statistical test. Due to the fact that all methods used present some inconvenience, in this paper we have used a wide number of methodologies and benchmarks in order to examine the robustness of IPO performance with respect to various model specifications. So, following the papers of Barber and Lyon (1997), Kothari and Warner (1997), Fama (1998) and Lyon et al. (1999) we have used these three methods:

❑ We calculate the long-run abnormal returns as the return on a buy-and-hold investment in the sample firm less the return on a buy-and-hold investment in a benchmark.

❑ Calendar-time portfolios.

❑ The Fama-French Three-Factor Model.

5.1. Buy-and-hold returns (BHR)

The long-run event studies of stock returns aim to assess the value of investing in the average sample firm with respect to an appropriate benchmark over the horizon of interest, that is why the correct measure is the buy-and-hold return (Barber and Lyon, 1997). Long-term investor experience is better captured by compounding short-term returns to obtain long-term buy-and-hold returns. In addition, cumulative abnormal returns are biased predictors of long-run buy-and-hold abnormal returns.

The long-run returns are calculated monthly compounding during 12, 36 and 60 months after the IPO, and they are adjusted by the normal return:

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[12] Zero moment is the time of the offer and the following period includes the following 12, 36 or 60 months. The reason behind the choice lies in the fact that these have been the periods mostt frequently used in other works, therefore facilitating comparisons. In each of the time horizons analysed we considered only those firms that were not excluded from trading. If the stocks were excluded before 12 months they did not form part of the sample, for this reason two firms were excluded: Cofiser and GDS Leasinter.

$$BHAR = \sum_{i=1}^{N}\left[\prod_{t=t_i}^{T_i}(1+R_{it})-1\right]-\left[\prod_{t=t_i}^{T_i}(1+E(R_{it}))-1\right]$$

Where R_{it} is the return on security i in month t, N is the number of securities, T is the number of months (12, 36 and 60 months)[13], t_i is the date of the closing price on the first day of trading and $E(R_{it})$ is the expected or normal return. We have considered different ways of calculating the expected return:

- ❑ A value-weighted market index (IGBM), embracing over 95% of the Madrid Stock Market and an equally-weighted market index.

- ❑ We form size and/or book-to-market portfolios. We measure firm size as the market value of common equity –shares outstanding multiplied by closing price– and we use the book value of common equity reported on the firm's balance sheet divided by the market value of common equity.

- ❑ We use as an alternative a control firm approach, in which sample firms are matched to a control firm on the basis of size and book-to-market ratio.

Portfolios are constructed in terms of the size and book-to-market ratio that are reconstituted in July of each year. Size is measured in June of each year as the market value of equity, calculated as the number of shares outstanding times the stock price the last day of June of each year. The book-to-market ratio is calculated in December of each year.

Size portfolios have been obtained by classifying the firms listed at the Madrid Stock Exchange in the period 1987-1997 according to the market value of equity in June of each year and creating size quintiles. In July of each year the firm that has carried out an IPO in the previous five years is allocated to a size quintile, taking as benchmark the mean return of the firms included in the corresponding quintile. The procedure followed in order to form portfolios in terms of the book-to-market ratio was similar, with the only difference being that the book-to-market ratio was calculated in December of each year. Later, each firm that had carried out an IPO in the previous five years was allocated to a quintile in terms of its book-to-market ratio.

In turn, for the formation of portfolios in terms of both criteria taken together we used the following procedure. First, the firms were divided according to their size in June of each year into tertiles[14] and within each size tertile the firms are again classified into tertiles created in terms of the book-to-market ratio in December of the previous year. Then, each firm that had carried out

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[13] For IPOs that took place near the end of the sample period, the compounding of the returns finishes in June 2000.

[14] Tertiles and not quintiles are use for portfolio formation is in order to place firms in each of the portfolios formed in terms of both criteria.

an IPO in the previous five years was allocated in July of each year to one of the 9 portfolios formed[15].

The IPOs are allocated to each portfolio and their returns are compared with those of the portfolio in order to obtain the abnormal return. For the IPOs, the market value of equity is calculated using the stock price at the end of the first month following going public. The book value of equity of IPO firms are obtained from the information prospectuses registered at the C.N.M.V. and correspond to December of the year prior to going public. The distribution of the firms into size and book-to-market portfolios in the month following the IPO can be seen in Table 6.

INSERT TABLE 6

As can be seen, IPOs tend to be concentrated in the portfolio of smaller size and lower book-to-market ratio: a total of 24 IPOs out of the 55 that make up the sample[16]. In particular, the firms in the sample tend to form part of the lower book-to-market ratio, 72.7% of the firms in the sample form part of this segment. In this context, if size and book-to-market ratio are determinants of the stock returns (Fama and French, 1992 and 1993) the use, to approximate the normal stock returns, of market indexes or portfolios formed in terms of different criteria is inappropiate.

On the other hand, Barber and Lyon (1997) document that matching sample firms to control firms of similar size and book-to-market ratios yield well-specified test statistics in all sampling situations considered. In this sense, as an alternative to the use of portfolios to estimate stock abnormal return we have used control firms.

Following similar criteria to the construction of portfolios we have chosen a control firm for each firm in the sample (IPO). First of all, firms are placed in the appropriate size tertile based on their June market value of equity. Second, we choose the firm with the book-to-value ratio closest to that of the sample firm. In July of each year this process is carried out.

When the stock abnormal returns are estimated using a market index, portfolios or control firms, we estimate the statistical significance of the stock abnormal returns. To test the null hypothesis that the mean buy-and-hold abnormal return is equal to zero for the sample of IPO firms, we first employ a conventional t-statistic:

$$t = \frac{\overline{AR}_T}{\sigma(AR_T)/\sqrt{n}}$$

[15] In order to avoid the portfolios being contaminated by the same firms that form the sample under study we have eliminated the firms that carried out an IPO from the portfolios, during the five years following going public.

[16] Only for one firm, Lafarge Coppe, of the 56 making up the sample of IPOs it was not possible to identify the book value of equity in the month following the IPO, and so it could not be assigned to a size and book-to-market portfolio.

where $\overline{AR}_T$ is the sample mean and $\sigma(AR_T)$ is the cross-sectional sample standard deviation of abnormal returns for the sample of n firms.

5.2. Calendar time portfolios

Brav (1997) emphasizes that all existing methods for drawing inferences from BHARs fail to correct fully for the correlation of returns across events not absorbed by the model used to adjust for expected returns. The problem is more severe in long-term BHARs because more firms have events within a large window than within a few days. Fama (1998) and Lyon *et al.* (1999) consider the use of calendar-time portfolios in order to solve the problem of cross-sectional correlation of returns across events.

Once it is known the horizon in which we desire to estimate the abnormal return for each calendar month we calculate the abnormal return for each security that had an event in the period –12, 36 and 60 months–. The abnormal return is calculated using the same benchmarks that in the previous case –a value weighted index, an equally-weighted market index, size and/or book-to-market portfolios and a control firm approach–.

$$AR_{it} = R_{it} - E(R_{it})$$

Then, we average the abnormal returns for the calendar month across stocks to get the abnormal return for the month on the portfolio of stocks with an event in the last 12, 36 or 60 months[17]:

$$MAR_t = \sum_{i=1}^{n_t} x_{it} AR_{it}$$

Where n_t is the number of firms in the portfolio in month t, x_{it} is the weight of the stock abnormal returns and it will be equal $1/n_t$ when abnormal returns are equally weighted and $MV_{it}/\Sigma MV_{it}$, –MV_{it} is the equity market value of firm i at time t– when abnormal returns are value-weighted. A grand mean monthly abnormal return is calculated:

$$MMAR = \frac{1}{T} \sum_{t=1}^{T} MAR_t$$

Where T is the total number of calendar months.

To test the null hypothesis of zero mean monthly abnormal returns, a t-statistic is calculated using the time-series standard deviation of the mean monthly abnormal returns:

$$t(MMAR) = \frac{MMAR}{\sigma(MAR_T)/\sqrt{T}}$$

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[17] This implies to re-form the portfolio every month.

The time-series variation of the monthly abnormal return on this portfolio accurately captures the effects of the correlation of returns across event stocks missed by the model for expected returns.

This approach can also be refined to allow for heteroskedasticity of the portfolio's abnormal return due to changes through time in the composition of the portfolio. The solution consists in dividing the abnormal portfolio return for each month by an estimate of its standard deviation. The overall abnormal return is then estimated by averaging the standardized monthly abnormal returns. So, we have obtained a standardized t-statistic.

5.3. Fama and French three-factor model (1992, 1993)

The Fama-French three-factor model has been used in several papers – Womack (1996), Loughran and Ritter (1995) and Espenlaub *et al.* (2000)– to estimate the long-term performance of securities.

Assume the event period of interest is five years. For each calendar month, calculate the return on a portfolio composed of firms that had carried out an IPO within the last five years of the calendar month[18]. The calendar-time return on this portfolio is used to estimate the following regression:

$$R_{pt} - R_{ft} = \alpha_p + \beta_{pi}(R_{mt} - R_{ft}) + s_p SMB_t + h_p HML_t + \varepsilon_{pt}$$

Where R_{pt} is the simple monthly return on the calendar-time portfolio–either equally-weighted or value-weighted–, R_{ft} is the monthly return on Treasury bills; R_{mt} is the return on a value-weighted market index; SMB_t is the difference in the returns of value-weighted portfolios of small stocks –portfolio of firms whose equity market value is less than the median value of the firms quoted at the Madrid Stock Exchange– and big stocks –portfolio of firms whose equity market value is higher than the medium value of the firms quoted at Madrid Stock Exchange–; HML_t is the difference in the returns of value-weighted portfolios of high book-to-market stocks –this portfolio represents the top 30% of all firms on the Madrid Stock Exchange– and low book-to-market stocks –this portfolio contains firms in the lowest 30% of the firms quoted at the Madrid Stock Exchange–[19].

The estimate of the intercept term provides a test of the null hypothesis that the mean monthly excess return on the calendar-time portfolio is zero.[20]

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[18] To determine the return on the portfolio, we have used both an equal and a value weighting of the stock returns.

[19] Since it is not necessary to know the size and the book-to-market ratio, this methodology allow us to consider firms with some data missing.

[20] Since the number of securities in the calendar-time portfolio varies from one month to the next, the error term in this regression may be heteroskedastic. That is why we use weighted

6. IPOs INITIAL RETURN

Since there could exist a relation between the two anomalies associated to the IPOs, it is fitting to analyse the two types of anomalies together . For this, we have calculated the initial returns of the Spanish IPOs between 1987 and 1997, as the difference between the closing price of the stock on the first day of trading and the issue price of the IPO, compared to the latter.

INSERT TABLE 7

As shown in TABLE 7, the average underpricing of the IPOs in the Spanish capital market during the study period is 12.29%, a percentage that indicates the returns that, on average, would be obtained by an investor that had bought the stocks in the offer and sold them at the end of the first day´s trading. The initial returns adjusted for the market return, measured as the return obtained by the General Index of the Madrid Stock Exchange (IGBM) in the same period, is 11.77%. This result is in line with the initial return obtained by most of the works commented on in Section 1 of this work.

7. LONG-RUN PERFORMANCE OF THE IPOs

7.1. Results using buy-and-hold returns (BHR)

Table 8 shows the results obtained when using buy-and-hold returns (BHR) that capture the return obtained by the investor when purchasing the IPO stocks the day following the issue and holds them for a time horizon of 1, 3 or 5 years. As can be seen in the Table, different alternatives have been used in the calculation of the expected returns: a value weight market index (IGBM), an equally-weighted index of the Madrid Stock Exchange, a size portfolio of firms (market value of equity), a book-to-market portfolio of firms, a size and book-to-market portfolio of firms and control firms selected in terms of the same criteria.

INSERT TABLE 8

The results reveal, independently of the benchmark used, the existence of abnormal returns which are not statistically significant and mostly positive, in the first year of stock trading, a result in line with the non-existence of long-run underperformance of IPOs one year after going public.

However, in the other two horizons considered, that is 3 and 5 years, we observe the existence of negative abnormal returns, with values between –14.16% and –29.55% for the case of 3 years and between –4.14% and –37.05% when the horizon is 5 years, values that in some cases are statistically significant. Thus, it can be observed that these negative abnormal returns are not determined by a few observations, but rather that approximately three quarters of the sample presents negative returns.

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least squares estimation, where the weighting factor is based on the number of securities in the portfolio in each calendar month.

Table 8 also compiles the wealth relative ratios that are the ratio of the mean returns of the IPO for a period and of the mean return of the respective benchmark in the same period and that are calculated according to the following expression:

$$WR_T = \frac{\frac{1}{N}\sum_{i=1}^{N}\left(\prod_{t=1}^{T}(1+R_{it})\right)}{\frac{1}{N}\sum_{i=1}^{N}\left(\prod_{t=1}^{T}(1+Rm_{it})\right)}$$

Where WR_T is the wealth relative ratio for the period between t=1 and t=T being T, alternatively, 12, 36 or 60 months; R_{it} is the return of firm i in month t after its flotation; Rm_{it} is the return on the index, portfolio of firms or control firm in month t after the flotation of firm i and N is the number of IPOs.

It can be seen that independently of the benchmark used, in the periods of 3 and 5 years the wealth relative ratio are less than one. In particular, the wealth relative ratio at 3 years using as a benchmark a size portfolio is 0.764 and 0.801 using a size and book-to-market portfolio. This result is in line with those obtained in other works. Thus, Ritter (1991) reports a wealth relative ratio, 3 years after the IPO, of 0.831 for the 1526 IPOs analysed for a size and industry portfolio.

If we analyse the buy-and-hold returns and the wealth relative ratios at 5 years of the IPOs in terms of the year of flotation (Table 9) it can be observed that with the exception, in general, of the years 1987 and 1988, the rest of the years and for most of the benchmarks, except some of the year 1990, using the wealth relative ratios are lower than one, revealing the long-run underperformance of the IPOs. The mean returns at the end of 5 years for the IPOs is 23.6% whereas any of the different benchmarks analysed present returns between 27.7% for the equally-weighted index and 61.5% for a book-to-market portfolio[21]. Thus, the wealth relative ratios at 5 years for the complete period oscillate between 0.77 for a book-to-market portfolio and 0.97 for an equally-weighted market index. The results reported are similar to those reflected in other works. Thus Loughran and Ritter (1995) reveal, for their study on 4,753 IPOs in the US market in the period 1970-1990, a wealth relative ratio of 0.70 for a control firm matched in terms of the firm´s market value. In this work, the wealth relative ratio at 5 years for a size portfolio is 0.78.

INSERT TABLE 9

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[21] In this sense, an investor who invests in IPOs at the end of the first day´s trading at the market price should invest 27.35% more than investing, at the same time, in firms of a similar size that have carried out an IPO, if he wishes to obtain the same wealth at the end of five years.

The returns and wealth relative ratios when using a control firm take more extreme values, which can be explained by the existence of a greater variability in the returns of a single firm than of a portfolio of firms.

In short, the use of buy-and-hold returns to estimate the long-run returns of Spanish IPOs reveals the non-existence of underperformance at 12 months for the different benchmarks considered. In turn, if we consider the periods of 36 and 60 months we observe negative abnormal returns that reach, only in some cases, significant values. This result is consistent with the literature on long-run underperformance in the international context (TABLE 3).

7.2. Results using Calendar-time portfolios

Long-run abnormal returns in this case have been calculated taking into account the correlation between the returns of different firms through the formation of calendar time portfolios (monthly) with the firms that have made an IPO, alternatively, in the previous 12, 36 or 60 months. The results reflected in Table 10 reveal the non-existence of long-run underperformance of IPOs when performance is calculated as the return of a portfolio composed in each month by the stocks of those firms that have carried out an IPO in the previous five years.

INSERT TABLE 10

Thus, it can be observed that when the calendar time portfolios (monthly) are formed equally weighting the abnormal returns of the firms –Panel A–, the IPOs tend to have a return at 5 years lower than that obtained by the benchmarks considered, with the exception of the IGBM (value weighted market index) and the equally-weighted index of the Madrid Stock Exchange. Nevertheless, none of the values obtained for the abnormal returns is statistically significant. However, when the monthly portfolios are formed weighting for the firm's market value we can state the existence of positive significant abnormal returns when using the IGBM (value weighted market index) or the equally weighted index as a benchmark. In particular the mean monthly calendar-time abnormal returns are 1.86% for the IGBM and 2.03% for the equally-weighted index.

The existence of higher positive returns at 5 years when the monthly portfolios are formed weighting the firms for market value than when using a pattern of equal weighting reveals a lower long-run underperformance in the IPOs made by smaller firms.

Results which are totally similar appear when considering periods of 36 and 12 months (TABLES 11 and 12). Thus, a non-existence of abnormal returns occurs in both periods when using an equal weighting scheme in the formation of portfolios and the abnormal returns are increased even reaching significant positive values when using the IGBM (value weighted market index) or the equally-weighted index as a benchmark and weighting the returns of the firms in terms of their market value, showing a better performance of the long-run returns of larger firms.

INSERT TABLES 11 Y 12

Another noteworthy fact revealed by the results is that in the three periods analysed –12, 36 and 60 months– when the portfolios are formed weighting for the market value and the IGBM (value weighted market index) or equally-weighted index is used as a benchmark the returns are significant and positive. However, this significance disappears when using any other benchmark to estimate the abnormal returns[22]. The fact that the sample under study is composed of small firms with a low book-to-market ratio can explain this result. If the factors of size and book-to-market ratio are determinants of the returns on the stocks then the use of an index that takes all the firms into account can over-estimate the abnormal returns.

In short, the use of calendar-time portfolios enables us to conclude the non-existence of long-run underperformance of Spanish IPOs. Although the results obtained are practically invariable regardless of the period or benchmarks used, some differences can be pointed out. Thus, on the one hand, the construction of calendar-time portfolios –monthly– weighted by market value tends to produce greater positive abnormal returns than when the portfolios are formed equally weighting the firms that have carried out an IPO. A result in line with a higher long run performance of the larger firms.

On the other hand, the market indexes tend to produce greater abnormal returns than the rest of the benchmarks used –size portfolios, book-to-market portfolios, size and book-to-market portfolios and control firms–, motivated by the particular composition of the sample of the IPOs analysed regarding these criteria.

The comparison of the long-run performance of IPOs depending on whether they are calculated as buy-and-hold returns or as mean monthly returns reveals that the first of the methodologies analysed gives rise to a more marked long-run underperformance of the IPOs. This result is in line with the conclusions drawn by Brav et al. (2000), as in their case the BHARs tend to magnify the long-run underperformance.

7.3. Results using the Fama and French three-factor model (1992, 1993)

The results obtained (Table 13) using the Fama and French three-factor model (1992, 1993) state the non-existence of long-run abnormal returns, since regardless of whether the dependent variable is the return weighted by value or equally weighted, the intercept takes positive although not statistically significant values.

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[22] This same relation between the abnormal returns, although without obtaining significant values, is produced when the return of the firms is equally weighted.

INSERT TABLE 13

Nevertheless, only the market premium is significant, as neither the SMB nor HML have statistically significant coefficients. These results are consistent with those reflected in Menéndez (2000) where it is revealed that the three-factor Fama and French model provided worse results when applied to small firms with low book-to-market ratios. As we mentioned above, our sample of IPOs is basically made up of small firms with low book-to-market ratios.

In summary, the use of mean monthly calendar-time returns instead of buy-and-hold returns reveals the lack of existence of long-run underperformance of the IPOs regardless of the period, the benchmark, or the weighting method used. When using buy-and-hold returns, there exist negative abnormal returns that are occasionaly significant in the periods of 36 and 60 months. Nevertheless, when using the other two methodologies –calendar-time portfolios and Fama and French three-factor model– that are based on the calculation of mean monthly calendar-time returns the non-existence of long-run performance is stated. Although the general conclusion is the lack of existence of long-run underperformance in the Spanish case, the magnitude of the long-run abnormal returns depends on the methodology used and to a lesser extent on the weighting method and the benchmark used for the adjustment of the returns on the IPOs.

Consequently, the existence or otherwise of long-run underperformance in IPOs is a question of methodology that depends on the form of estimating the long-run abnormal returns. This conclusion is similar to that contributed by Brav *et al.* (2000) when stating that the use of buy-and-hold returns tends to over-estimate the abnormal returns.

8. LONG-RUN PERFORMANCE AND IPO PROSPECTUS INFORMATION

The second aim of this work is to determine whether the information available to the investors at the time of the IPO, and compiled in the information prospectus of the offer, can be used to predict the long-run performance of the firms´ shares and, consequently, be able to distinguish at the time of purchasing the stocks, the firms that will have a good long-run performance from those that will experience low returns. For this, we have used the logit analysis, in order to determine whether the information contained in the Stock Exchange admission prospectus is useful for detecting future "winners" or "losers", that is, firms that will have good or bad long-run performance, respectively.

We have estimated the logit models using as independent variables both the characteristics of the firm and those of the initial offer and the results of the analysis are compiled in Table 14. In model 1, the dependent variable takes a value of 1 when the firm is a winner and a value of 0, when it is a loser, based on the fact that the Stock Exchange value in the five years following the IPO are positive or negative, respectively. This model presents the results with all the independent variables proposed as explanatory of the firm´s long-run performance. In the second model there only appear the results with the statistically significant regressors and, finally, column three contains the

results of the estimation taking as an independent variable a dummy variable that takes a value of 1 if the returns obtained by the firm in the three years following the IPO is greater than those considered normal. The returns are corrected for the returns of a comparable portfolio of firms, in terms of size (market value of equity) and book-to-market ratio.

INSERT TABLE 14

On the one hand, as variables concerning the firm we incorporate size (ACTIVO), as well as return on assets in the year prior to the IPO (ROA). With this, we attempt to analyse if the greater uncertainty associated to smaller firms, as well as the return on equity of the firm prior to the IPO have an influence on the long-run performance.

On the other hand, we incorporate variables that compile characteristics of the IPO itself, such as the size of the issue (OFERTA), the reputation of the underwriter (REPUTACIÓN)[23] and the percentage of stocks retained in the offer (ALFA). We also include the level of underpricing of the IPO (LNARI), as well as the number of SEOs that the firm carries out from going public to the end of the sample period[24]. Smaller issues are usually more speculative; consequently, it should be these which obtain worse long-run returns. On the contrary, those issues for which highly prestigious underwriters have been chosen should present better long-run returns, due to the reinforcement of the reputation of the underwriter. Finally, and in line with the signalling hypothesis for the explanation of underpricing, proposed by Allen and Faulhaber (1989), Welch (1989) and Grinblatt and Hwang (1989), the best firms undervalue the initial offer to a greater extent, in order to get more funds in later SEOs, in which the firm will sell stocks at a price closer to their intrinsic value. Consequently, according to the signalling hypothesis, this type of firm is that which should present better long-run performance.

The results compiled in Table 14 reveal that the level of underpricing and the number of SEOs made by the firm, are positively related to the long-run performance of the IPOs. On the other hand, the rest of the variables are not statistically significant. That is to say, neither the size of the firm nor its return on assets enable conclusions to be drawn as to what will be its long-run performance. The same occurs to the characteristics of the offer, except its initial return, that presents a positive statistically significant relation with the returns obtained by the firm in the five years following the issue. Regarding the performance of the firm in the three years following the issue, this is affected by both the percentage of shares retained by the initial shareholders in the offer, and the number of SEOs performed by the firm from the IPO until the end of the study period.

In summary, in line with the results obtained, the information contained in the prospectus does not seem to act as an element for predicting the long-run

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[23] The variable REPUTACIÓN is a variable codified into three levels, in line with the grouping of underwriters presented in TABLE 15. The variable takes a value of 3 if the underwriter belongs to group 1 (high experience), a value of 2 if it belongs to group 2 (moderate experience) and a value of 1 if it belongs to group 3 (low experience).

[24] It should be mentioned that the stock exchange admission prospectus does not include information on these aspects.

performance of IPOs. On the other hand, we confirm the signalling hypothesis for explaining the anomalies associated with IPOs –underpricing and underperformance–.

The signalling hypothesis defines the issuer as the agent with more information about the current value and the risk of the firm's future cash flows compared to other agents participating in the IPOs, establishing the assumption that the firm that goes public, when deciding the price of the offer, explicitly considers the possibility of performing the subsequent SEOs (Allen and Faulhaber (1989), Welch (1989) and Grinblatt and Hwang (1989)). The signalling explanation implies the greater probability that firms with greater underpricing in the IPO:

(a) perform subsequent SEOs of shares, in which the firm can sell its shares at a price closer to their intrinsic price, when the market states its quality and

(b) offer a larger amount of shares in the subsequent SEOs, since the firms follow a sales strategy in successive stages, retaining stocks in the issue –that is the undervalued offer and that represents the cost of signalling the quality of the firm–.

This hypothesis makes a prediction regarding the long-run performance of IPOs: if the firms underprice the stocks to signal their quality to the market, those of high quality should obtain better performance than those of low quality as a consequence of the price discount. The firms choose to underprice with the aim of later selling more stocks in the market, at a higher price than could be obtained in the the absence of the signal, which is incompatible with the observation of long-run underperformance. Only the firms whose stocks experience a good performance in their quotation should return to the capital market in a short period of time, as seems to be the case of the United States (Michaely and Shaw, 1994), the United Kingdom (Levis, 1993b) and Germany (Ljungqvist, 1996) and, also, in line with this work, the Spanish case.

If a firm is capable of bearing the cost entailed in lowering the price of stocks it is conveying the signal of being a "good" firm and, foreseeably, will enjoy a greater market value as well as greater possibilities of obtaining future financing in the capital market. This theory postulates the existence of a positive relation between the level of underpricing and the value of the firm and, consequently, its future stock performance. High quality issuers underprice the IPO with the aim of paving the way towards the next SEO, in which it could sell new stocks, once the market knows the firm's real quality.[25]

Finally, it is necessary to comment that the validity of this explanation and its implications depends on the fact that the firms really sell their shares in two

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[25] Welch (1989) has stated empirically that high quality firms underprice their IPOs to obtain a higher price in the subsequent SEO and that many issuers obtain substantial amounts of funds in the years following the IPO. Welch (1989) empirically contrasts his theoretical model on a database previously used by Beatty and Ritter (1986) and by Ritter (1984a, 1987), made up of 1,028 IPOs of the United States for 1977–1982. Welch's results show that 288 of the IPOs in the sample again carried out 395 SEOs obtaining, on average, approximately three times the IPO profits.

stages, as should occur in order to recover the cost of the signal, in line with the assumptions it establishes. It must be taken into account that there exist capital markets whose regulation requires the initial owners to abstain, during a period of time, from selling stocks in the market following the firm´s going public. This legal period is a minimum time in which the issuers cannot sell stocks and, the longer this period, the greater the probability that exogenous events are produced that dominate any effect that the underpricing signal could have created. This explains that the percentage of stocks retained by the initial owners is related to the performance obtained by the stocks in the three years following going public, whereas the initial returns do not reach conventional levels of statistical significance.

9. CONCLUSIONS

This work has a twofold objective:

(i)   The study of the long-run performance of IPOs in the Spanish capital market and

(ii)   The determination of the usefulness of the information contained in the IPO information prospectus, to differentiate firms that have a high long-run performance (winners), from those that have a low performance (losers).

The results of the estimation of the long-run performance of the IPOs made between 1987 and 1997, in event windows of three and five years, reveal, in general, the non-existence of long-run underperformance, although the magnitude of abnormal returns depends on the methodology used and to a lesser extent on the weighting method and on the benchmark used for the adjustment of the IPOs returns. The existence or otherwise of long-run underperformance in IPOs is a methodological question that depends on the form of estimating the long-run abnormal returns. Thus, long-run underperformance is present when BHRs are used, but not when using other methodologies consisting in estimating mean monthly calendar-time returns and the Fama and French three-factor model–. Besides, the weighting method affects the results obtained, since when we use the equally weighted method the abnormal return obtained is lower than when using a value weighted approach. This result is consistent with a long-run underperformance concentrated in small firms.

Regarding the study of the relevance of the information contained in the IPO prospectus, the results of the logit analysis performed reveal that neither the characteristics of the offer, nor those of the firm are related to the behaviour of the stock price three and/or five years after the IPO. However, the percentage of shares retained in the offer influences the firm´s performance at three years, whereas the performance in the longer run –five years- is positively related to the initial underpricing of the IPO, as well as to the number of SEOs made since going public up to the end of the study period. This result confirms the signalling hypothesis for the explanation of the initial underpricing and long-run underperformance of the IPOs in the Spanish capital market.

Underpricing understood as a signal of the firm´s value argues that firms choose to undervalue with the aim of later selling more stocks in the market, at a higher price than they could obtain in the absence of the signal. Consequently, there should exist a positive relation between the level of underpricing of the IPOs and the long-run performance of the firm, which is confirmed with the results of this work.

REFERENCES

AFFLECK-GRAVES, J. and SPIESS, K. (1995): "Underperformance in Long-Run Stock Returns Following Seasoned Equity Offerings". *Journal of Financial Economics*, vol. 38, pp. 243-267.

AGGARWAL, R.; LEAL, R. and HERNÁNDEZ, L. (1993): "The Aftermarket Performance of Initial Public Offerings in Latin America". *Financial Management*, vol. 22, pp. 42-53.

ALPHAO, R. (1989): "Initial Public Offerings on the Lisbon Stock Exchange". *Mimeograph. Facultad de Economía. University Nova de Lisboa.*

ALVAREZ, S. (1999): La valoración de las Ofertas Públicas Iniciales. Phd. Dissertation. University of Oviedo (Spain).

ALLEN, F. and FAULHABER, G. (1989): "Signaling by Underpricing in the IPO Market". *Journal of Financial Economics,* vol. 23, pp. 303-323.

ANSOTEGUI, C. and FABREGAT, J. (1999): "Initial public offerings on the Spanish Stock Exchange". *Working Paper. ESADE. .*

ARCAS, Mª. and RUIZ, F. (1999): "Las ofertas públicas de venta (OPVs) de acciones en el mercado bursátil español: privatizaciones frente a no privatizaciones". *Cuadernos de Economía y Dirección de la Empresa,* vol. 4, pp. 325-347.

BARBER, B. and LYON, J. (1997): "Detecting Long-Run Abnormal Stock Returns: The Empirical Power and Specification of Test Statistics". *Journal of Financial Economics,* vol. 43, pp. 341 –372.

BEATTY, R. and RITTER, J. (1986): "Investment Banking, Reputation, and the Underpricing of Initial Public Offerings". *Journal of Financial Economics,* vol. 15, pp. 213-232.

BHABRA, H. and PETTWAY, R. (2000): "IPO Prospectus Information and Subsequent Performance". *Paper presented in FMA 2000 Conference.*

BRAV, A. (1997): "Inference in long-horizon event studies: A Bayesian approach with application to initial public offerings". *Working Paper. University of Chicago.*

BRAV, A. (2000): "Inference in long-horizon event studies: A Bayesian approach with application to initial public offerings". *Journal of Finance,* vol. 55 (5), pp. 197-2016.

BRAV, A.; GECZY, C. and GOMPERS, P. (2000): "Is the abnormal return following equity issuance anomalous?. *Journal of Financial Economics,* vol. 56, pp. 206-249.

BUIJS, A. and EIJGENHUIJSEN, H. (1993): "Initial Public Offerings in the Netherlands 1982-1991: An Analysis of Initial Returns and Long-Run Performance". *Mimeograph. University of Amsterdam.*

CAI, J. and WEI, K.C. (1997): "The Investment and Operating Performance of Japanese Initial Public Offerings". *Pacific-Basin Finance Journal,* vol. 5, pp. 389-417.

CANINA, L.; MICHAELY, R.; THALER, R. and WOMACK, K. (1998): "Caveat: compounder: A warning about using the daily CRSP equally-weighted index to compute long-run excess returns". *Journal of Finance*, vol. 53 (1), pp. 403-416.

CARTER, R. and MANASTER, S. (1990): "Initial Public Offerings and the Underwriter Reputation". *The Journal of Finance,* vol. 45, nº 4, pp. 1.045-1.067.

CHEN, H. (1992): "The Price Behaviour of IPOs in Taiwan" *Mimeograph. University of Illinois.*

CHERUBINI, U. and RATTI, M. (1992): "Underpricing of Initial Public Offerings in the Milan Stock Exchange, 1985-1991". *Mimeograph Banca Comercial Italiana.*

CUSATIS, P. ; MILES, J. and WOOLRIDGE, J. (1993): "Restructuring through Spinoffs: The Stock Market Evidence". *Journal of Financial Economics,* vol. 33, pp. 293-311.

DAWSON, S. (1987): "Secondary Stock Market Performance of Initial Public Offers, Hong Kong, Singapore and Malaysia: 1978/1984". *Journal of Business Finance and Accounting*, vol. 14, nº 1, Spring, pp. 65-76.

DHATT, M.; KIM, Y. and LIM, U. (1993): "The Short-Run and Long-Run Performance of Korean IPOs: 1980-90". *Mimeograph. University of Cincinnati.*

ESPENLAUB, S.; GREGORY, A. and TONKS, I. (2000): "Re-assessing the long-term underperformance of UK Initial Public Offerings". *European Financial Management*, vol. 6, nº 3, pp. 319-342.

FAMA, E. (1998): "Market efficiency, long-term returns and behavioral finance". *Journal of Financial Economics,* vol. 49, pp. 283-306.

FAMA, E. and FRENCH, K. (1992): "The Cross Section of Expected Stock Returns". *The Journal of Finance*, vol. 47, pp. 427-465.

FAMA, E. and FRENCH, K. (1993): "Common risk factors in the returns of stocks and bonds". Journal of Financial Economics, vol. 33 pp. 3-55.

FARINÓS, J. (1999): "La post-performance de las OPVs en España". *Working paper*, nº 91. University of Valencia.

FINN, F. and HIGHAM, R. (1988): "The Performance of Unseasoned New Equity Issues-cum-Stock Exchange Listings in Australia". *Journal of Banking and Finance*, vol. 12, pp. 333-351.

FREIXAS, X. and INURRIETA, A. (1991): "Infravaloración en las salidas a bolsa". *Working paper*, nº 91-21*, FEDEA, Madrid.*

GRINBLATT, M. and HWANG, C. (1989): "Signalling and the Pricing of New Issues". *The Journal of Finance,* vol. 44, nº 2, pp. 393-420.

HIN, T. and MAHMOOD, H. (1993): "The Long-Run Performance of Initial Public Offerings in Singapore". *Securities Industry Review,* vol. 19, pp. 47-58.

IBBOTSON, R. (1975): "Price Performance of Common Stock New Issues". *Journal of Financial Economics,* vol. 2, pp. 235-272.

IBBOTSON, R.; SINDELAR, J. and RITTER, J. (1988): "Initial Public Offerings". *Journal of Applied Corporate Finance,* vol. 1, pp. 37-45.

IBBOTSON, R.; SINDELAR, J. and RITTER, J. (1994): "The Market´s Problems with the Pricing of Initial Public Offerings". *Journal of Applied Corporate Finance*, vol. 7, pp. 66-74.

JACQUILLAT, B. (1986): "French Auctions of Common Stock: Methods and Techniques of New Issues, 1966-86". *Going Public: An International Overview. Working Paper, nº 2.*

JAIN, B. and KINI, O. (1994): "The Post-Issue Operating Performance of IPO Firms". *The Journal of Finance,* vol. 49, nº 5, pp. 1.699-1.726.

JEGADEESH, N.; WEINSTEIN, M. and WELCH, I. (1993): "An Empirical Investigation of IPO Returns and Subsequent Equity Offerings". *Journal of Financial Economics*, vol. 34, pp. 153-175.

JENKINSON, T. (1990): "Initial Public Offerings in the United Kingdom, the United States, and Japan". *Journal of the Japanese International Economies*, vol. 4, pp, 428-449.

JENKINSON, T. and MAYER, C. (1988): "The Privatisation Process in France and the U.K.". *European Economic Review*, vol. 32, pp. 482-490.

JOG, V. and SRIVASTAVA, A. (1996): "The Canadian Environment for Initial Public Offerings: Underpricing, Long-Term Performance and the Process of Going Public". *Mimeograph. Carleton University. Ottawa.*

KANEBO, T. and PETTWAY, R. (1994): "The Effects of Removing Price Limits and Introducing Auctions upon Short-Term IPO Returns: The Case of Japanese IPOs". *Working paper, nº 52.794. Financial Research Institute. University of Missouri.*

KELOHARJU, M. (1993a): "Initial IPO Returns and the Characteristics of Post-IPO Financing in Finland". *Mimeograph, Helsinki School of Economics and Business Administration.*

KELOHARJU, M. (1993b): "The Winner´s Curse, Legal Liability, and the Long- Run Price Performance of Initial Public Offerings in Finland". *Journal of Financial Economics*, vol. 34, pp. 251-277.

KIM, J.; KRINSKY, I. and LEE, J. (1995): "The Aftermarket Performance of Initial Public Offerings in Korea". *Pacific-Basin Finance Journal*, vol. 3, pp. 429-448.

KIM, M. and RITTER, (1999): "Valuing IPOs". *Journal of Financial Economics*, vol. 53, pp. 409-437.

KOH, F. and WALTER, T. (1989): "A Direct Test of Rock´s Model of the Pricing of Unseasoned Issues". *Journal of Financial Economics*, vol. 23, pp. 251-272.

KOTHARI, S. and WARNER, J. (1997): "Measuring Long-Horizon Security Price Performance" *Journal of Financial Economics,* vol. 43, pp. 301-340.

KUNZ, R. and AGGARWAL, R. (1994): "Why Initial Public Offerings Are Underpriced: Evidence from Switzerland". *Journal of Banking and Finance,* vol. 18, pp. 705 -723.

LEE, P.; TAYLOR, S. and WALTER, T. (1994): "Australian IPO Pricing in the Short and Long Run". *Mimeograph. University of Sidney.*

LEE, P., TAYLOR, S. and WALTER, T. (1996): "Australian IPO Pricing in the Short and Long Run". *Journal of Banking and Finance*, vol. 20, pp. 1.189-1.210.

LEVIS, M. (1993): "The Long-Run Performance of Initial Public Offerings: The UK Experience 1980 - 1988". *Financial Management,* vol. 22, pp. 28-41.

LJUNGQVIST, A. (1996): "Can Firms Outwit the Market?. Timing Ability and the Long Run Performance of IPOs" in *M. Levis (eds). Empirical Issues in Raising Equity Capital. Amsterdam, North Holland.*

LJUNGQVIST, A. (1997): "Pricing Initial Public Offerings: Further Evidence from Germany". *European Economic Review*, vol. 41, nº 7, pp. 1309-1320.

LOUGHRAN, T. (1993): "NYSE vs. NASDAQ Returns: Market Microstructure or the Poor Performance of Initial Public Offerings". *Journal of Financial Economics,* vol. 33, pp. 241-260.

LOUGHRAN, T. and RITTER J. (1995): "The New Issues Puzzle". *The Journal of Finance,* vol. 50, nº 1, pp. 23- 51.

LOUGHRAN, T. and RITTER J. (2000): "Uniformly least powerful test of market efficiency". *Journal of Financial Economics,* vol. 55, pp. 361-389.

LOUGHRAN, T.; RITTER J. and RYDQVIST, K. (1994): "Initial Public Offerings: International Insights". *Pacific-Basin Finance Journal,* vol. 2, pp. 165-199.

LYON, J.; BARBER, B. and TSAI, C. (1999): "Improved Methods for Tests of Long-Run Abnormal Stock Returns". *Journal of Finance*, vol. LIV, nº 1, pp. 165-201.

MANIGART, S. and ROGIERS, B. (1992): "Empirical Examination of the Underpricing of Initial Public Offerings on the Brussels Stock Exchange". *Mimeograph. Vlerick School for Management. University of Ghent.*

McGUINNESS, P. (1992): "An Examination of the Underpricing of Initial Public Offerings in Hong Kong: 1980-90". *Journal of Business Finance and Accounting,* vol. 19, nº 2, January, pp. 165-186.

McGUINNESS, P. (1993): "The Post-Listing Return Performance of Unseasoned Issues of Common Stock in Hong Kong". *Journal of Business Finance and Accounting,* vol. 20, nº 2, pp. 167-194.

MENÉNDEZ, S. (2000): "Primas de riesgo en la estimación de la rentabilidad de las acciones del mercado español de capitales". Paper presented in the XVI Jornadas de Economía Industrial, Madrid.

MICHAELY, R. and SHAW, W. (1994): "The Pricing of Initial Public Offerings: Tests of Adverse-Selection and Signaling Theories". *Review of Financial Studies*, vol. 7, nº 2, pp. 279-319.

MICHAELY, R. and SHAW, W. (1995): "Does the choice of auditor convey quality in an initial public offering?". *Financial Management*, vol. 24, pp. 15-30.

PLANELL, S. (1995): "Determinantes y efectos de la Salida a Bolsa en España: Un análisis empírico". W*orking paper. CEMFI.*

RAHNEMA, A.; FERNÁNDEZ, P. and MARTÍNEZ-ABASCAL, E. (1993): "Initial Public Offerings (IPOs): The Spanish Experience". *Working paper,* nº 243, *IESE, University of Navarra.*

RAO, G.R. (1993): "The relation between stock returns and earnings: A study of newly-public firms". Working paper, Kidder Peabody and Co., New York.

RITTER, J. (1984a): "Signaling and the Valuation of Unseasoned New Issues: A Comment". *The Journal of Finance*, vol. 39, nº 4, pp. 1.231-1.237.

RITTER, J. (1984b): "The "Hot Issue" Market of 1980". *Journal of Business,* vol. 57, pp. 215-240.

RITTER, J. (1987): "The Costs of Going Public". *Journal of Financial Economics,* vol. 19, pp. 269-281.

RITTER, J. (1991): "The Long-Run Performance of Initial Public Offerings". *The Journal of Finance,* vol. 46, nº 1, pp. 3-28.

RYDQVIST, K. (1993): "Initial Public Offerings in Sweden". Working Paper*, nº 48, Stockholm School of Economics.*

SHAW, D. (1971): "The Performance of Primary Common Stock Offerings: A Canadian Comparison". *The Journal of Finance*, vol. 26, pp. 1.101-1.113.

SIMON, C. (1989): "The Effect of the 1933 Securities Act on Investor Information and the Performance of New Issues". *The American Economic Review*, vol. 79, nº 3, pp. 295-318.

STIGLER, G. (1964a) : "Public Regulation of the Securities Markets". *Journal of Business*, vol. 37, pp. 117– 142.

STIGLER, G. (1964b) : "Comment". *Journal of Business*, vol. 37, pp. 117-142.

TEOH, S.; WELCH, I. and WONG, T. (1998): "Earnings Management and the Post Issue Underperformance of Seasoned Equity Offerings". *Journal of Financial Economics*, vol. 50, pp. 63-99.

VOS, E. and CHEUNG, J. (1992): "New Zealand IPO Underpricing: The Reputation Factor." *Small Enterprise Research,* vol. 1, pp. 13-22.

WETHYAVIVORN, K. and KOO-SMITH, Y. (1991): "Initial Public Offerings in Thailand, 1988-89: Price and Return Patterns", in *S. G. Rhee and R.P. Chang (eds). Pacific-Basin Capital Markets Research, vol. 2, Amsterdam: North – Holland.*

WELCH, I. (1989): "Seasoned Offerings, Imitation Costs, and the Underpricing of Initial Public Offerings". *The Journal of Finance,* vol. 44, nº 2, pp. 421-449.

WOMACK, K. (1996): "Do brokerage analysts´ recommendations have investment value?. *Journal of Finance*, vol. 51, pp. 137-168.

Table 1. International Evidence of IPO Underpricing

Country	Study	Sample Period	Sample Size	Initial Return (%) (a)
Germany	Ljungqvist (1997)	1970-93	180	9,2
Australia	Finn and Higham (1988)	1966-78	93	29,2
Australia	Lee *et al.* (1994)	1976-89	266	11,9
Belgium	Manigart and Rogiers (1992)	1984-90	28	13,7
Brazil	Aggarwal *et al.* (1993)	1979-90	62	78,5
Canada	Jog and Srivastava (1996)	1971-92	254	7,4
Chile	Aggarwal *et al.* (1993)	1982-90	19	16,3
Korea	Dhatt *et al.* (1993)	1980-90	347	78,1
Spain	Rahnema *et al.* (1993)	1985-90	85	10,8
Spain	Freixas and Inurrieta (1991)	1986-90	58	22,4
United States	Ibbotson *et al.* (1994)	1960-92	10.626	15,3
United States	Ritter (1987)	1977-82	664	14,8
United States	Ritter (1987)	1977-82	364	47,8
Finland	Keloharju (1993 a)	1984-92	91	14,4
France	Jacquillat (1986)	1972-86	87	4,8
Great Britain	Jenkinson and Mayer (1988)	1983-86	143	10,7
Great Britain	Jenkinson and Mayer (1988)	1983-86	68	4,7
Great Britain	Jenkinson and Mayer (1988)	1983-86	26	-2,2
Hong Kong	McGuinness (1992)	1980-90	80	17,6
Italy	Cherubini and Ratti (1992)	1985-91	75	29,7
Japan	Jenkinson (1990)	1986-88	48	54,7
Japan	Kanebo and Pettway (1994)	1989-93	37	12,0
Malaysia	Dawson (1987)	1978-83	21	166,6
Mexico	Aggarwal *et al.* (1993)	1987-90	37	33,0
New Zealand	Vos and Cheung (1992)	1979-91	149	28,8
Netherlands	Buijs and Eijgenhuijsen (1993)	1982-91	72	7,4
Portugal	Alphao (1989)	1986-87	62	54,4
Singapore	Koh and Walter (1989)	1973-87	66	27,0
Sweden	Rydqvist (1993)	1970-91	213	39,0
Switzerland	Kunz and Aggarwal (1994)	1983-89	42	35,8
Thailand	Wethyavivorn and Koo-Smith (1991)	1988-89	32	58,1
Taiwan	H.L. Chen (1992)	1971-90	168	45,0

Initial returns may be measured between the (first) subscription day and the first trading day, or some day soon after trading starts. They may be initial returns or initial market adjusted returns. Generally, results are robust to market-return adjustments and the choice of time. Averages are calculated using equal weights.

Table 2. Evidence of IPO´s Underpricing in the Spanish Capital Market

STUDY	AIM	SAMPLE PERIOD	MARKET	SAMPLE SIZE	LEVEL OF UNDERPRICING	UNDERPRICING EXPLANATORY VARIABLES
• Martínez-Abascal (1990)	IPOs	1986-90	Madrid and Barcelona	74	11%	_
• Freixas and Inurrieta (1991)	IPOs, and SEOs	1986-90	Madrid	58	22,4%	-Company Size -Property of the company -Time to go public -Foundation of the C.N.M.V. (SEC)
• Rahnema *et al.* (1993)	IPOs	1985-90	Madrid and Barcelona	85	Total Sample: 10,8% Publics: 4,9% Privates: 9,6%	-Company Size -Public or Private Offer -Industry
• García *et al.* (1998)	IPOs	1990-97	Madrid	20	11,91%	_
• Arcas and Ruiz (1999)	SEOs	1992-97	Madrid	44	Total Sample: 11,315% Initial: 17,168% SEOs: 2,453% Privatization: 5,397% Private Companies: 33,180%	_
• Ansotegui and Fabregat (1999)	IPOs	1986-1998	Madrid and Barcelona	99	10,68%	_
• Álvarez (1999)	IPOs	1985-97	Madrid	115	Total Sample: 11,63% Previous Offering: 12,64%.	-Market return and number of days between the fixing price day and the first trading day. -Price at the end of the first trading day. -Future SEOs.

Initial returns are measured between the first subscription day and the first trading day.

Table 3. International Evidence of IPO Long-Run Performance

Country	Study	Sample Period	Sample size	Window (years) (a)	Return (%) (b)
Germany	Ljungqvist (1997)	1970-90	145	3	-12,1
Australia	Lee *et al.* (1994)	1976-89	266	3	-51,0
Brazil	Aggarwal *et al.* (1993)	1980-90	62	3	-47,0
Canada	Shaw (1971)	1956-63	105	5	-32,3
Chile	Aggarwal *et al.* (1993)	1982-90	28	3	-23,7
Korea	Kim *et al.* (1995)	1985-88	99	3	+91,6
United States	Stigler (1964 a, b)	1923-28	70	5	-37,7
United States	Simon (1989)	1926-33	35	5	-39,0
United States	Simon (1989)	1934-40	20	5	+6,2
United States	Stigler (1964 a, b)	1949-55	46	5	-25,1
United States	Cusatis *et al.* (1993)	1965-88	146	3	+33,6
United States	Loughran (1993)	1967-87	3.656	6	-33,3
United States	Loughran y Ritter (1995)	1970-90	4.753	5	-30,0
United States	Ritter (1991)	1975-84	1.526	3	-29,1
Finland	Keloharju (1993)	1984-89	79	3	-21,1
Great Britain	Levis (1993)	1980-88	712	3	-8,1
Hong Kong	McGuinness (1993)	1980-90	72	2	-18,3
Japan	Cai y Wei (1997)	1971-90	172	3	-27,0
Singapur	Hin y Mahmood (1993)	1976-84	45	3	-9,2
Sweden	Loughran *et al.* (1994)	1980-90	162	3	+1,2
Switzerland	Kunz y Aggarwal (1994)	1983-89	34	3	-6,1

(a) Window is the number of years over which after-market returns are recorded.
(b) Returns are calculated over the investment window and thus are annualized, exclude the initial underpricing return, and are generally market-adjusted, but not risk-adjusted. Some authors use a range of benchmarks; in these cases, a representative result is shown. Computation methodologies vary.

• Source: LOUGHRAN , T. et al. (1994): "Initial Public Offerings: International Insights". Pacific-Basin Finance Journal, vol. 2, pp. 165 – 199.

Table 4.- Composition of the Sample

ADMISSION DATE	COMPANY	INDUSTRY*
13/04/87	Prosegur	Other Industries and Services
18/05/87	Autopistas, Concesionaria Española	Communication
17/06/87	Papelera de Navarra	Chemical
11/04/88	Empresa Nacional de Celulosas	Chemical
19/09/88	Europistas, Concesionaria Española	Communication
30/03/89	Lingotes Especiales	Metal- Mechanical
20/04/89	Grupo Anaya	Other Industries and Services
21/04/89	Financiera Sotogrande	Other Industries and Services
21/04/89	Liwe Española	Other Industries and Services
11/05/89	Repsol	Chemical
19/05/89	Nicolás Correa	Metal- Mechanical
23/05/89	Industrias del Besós	Metal- Mechanical
12/06/89	Informes y Proyectos	Other Industries and Services
21/07/89	Algodonera de San Antonio	Other Industries and Services
25/07/89	Xey	Other Industries and Services
01/08/89	Marco Ibérica Distribución de Ediciones	Other Industries and Services
05/10/89	Radiotrónica	Metal- Mechanical
28/11/89	Bodegas Bobadilla	Food
30/11/89	Uniland Cementera	Construction
14/02/90	Avidesa. Luis Suñer	Food
04/06/90	Tipel	Other Industries and Services
06/06/90	Leisa	Construction
23/07/90	Commerzbank	Banks and Other Financial Institutions
01/08/90	Obras y Construcciones Industriales	Construction
20/08/90	Interclisa Carrier	Other Industries and Services
10/09/90	Volkswagen	Metal- Mechanical
27/12/90	Banco Mapfre	Banks and Other Financial Institutions
09/05/91	Banco de Ibiza	Banks and Other Financial Institutions
15/07/91	Bayer	Chemical
14/08/91	Construcciones Laín	Construction
02/09/91	Obras y Construcciones	Construction
09/09/91	Banco Simeón	Banks and Other Financial Institutions
10/10/91	Centros Comerciales Pryca	Other Industries and Services
24/10/91	Cementos Portland	Construction
09/03/92	Fomento de Construcciones y Contratas	Construction
27/07/92	Omsa Alimentación	Food
21/12/92	Inversiones Ibersuizas	Investment
12/05/93	Argentaria	Banks and Other Financial Institutions
09/07/93	Lafarge Coppee	Construction
17/03/94	Centros Comerciales Continente	Other Industries and Services
08/07/94	Cortefiel	Other Industries and Services
17/11/94	Ginés Navarro Construcciones	Construction
23/12/94	Mapfre Vida	Banks and Other Financial Institutions
02/07/96	Sol Meliá	Other Industries and Services
13/11/96	Tele Pizza	Other Industries and Services
14/11/96	Miquel y Costas	Chemical
29/11/96	Abengoa	Other Industries and Services
18/03/97	Adolfo Domínguez	Other Industries and Services
16/07/97	Barón de Ley	Food
17/07/97	Compañía Vinícola del Norte de España	Food
30/09/97	Bodegas Riojanas	Food
01/10/97	Aldeasa	Other Industries and Services
10/11/97	ACS, Actividades de Construcción	Construction
28/11/97	Iberpapel Gestión	Chemical
10/12/97	Aceralia Corporación Siderúrgica	Metal- Mechanical
15/12/97	Dinamia Capital Privado	Investment

*According to the classification of the Madrid Stock Exchange's Official Bulletin.
The number of IPOs in the sample is 56.

Table 5.- Age of IPO Firms in the Spanish Capital Market

Year	1987	1988	1989	1990	1991	1992	1993	1994	1996	1997	Average
Operational History (years)	21	20	29	27	48	28	56	32	35	38	**33**

The operational history is the number of years between the foundation of the company and the first trading day. This data has been obtained from the IPO prospectuses.

Table 6. Firms Classification in Portfolios according to Size and Book-to-Market Ratio

		Book-to-Market Ratio			
		Low	Medium	High	TOTAL
Market	Small	24	7	1	*32*
Value	Medium	9	1	1	*11*
of	Big	7	1	4	*12*
Equity	*TOTAL*	*40*	*9*	*6*	*55*

The table shows the distribution of firms according to size and book-to-market portfolios in the month after the IPO. One of the firms has been eliminated for not having all the necessary data (Lafarge Coppe). Size is measured in June each year as the market value of common equity, computed as the number of shares outstanding multiplied by the closing price the last day of June each year. Book-to-market ratio is computed in December each year. Portfolios have been constructed by classifying firms listed at the Madrid Stock Exchange between 1987-1997 according to market value of common equity in June each year. We form tertiles according to size. In each size tertile, firms are classified according to book-to-market ratio. IPOs are assigned to each of the corresponding portfolios and their return is compared with the portfolio´s return to obtain the abnormal return. IPO´s market value of equity is computed with the closing price at the end of the first month after the IPO. Book value of common equity for IPO firms is obtained from IPO prospectuses registered in the C.N.M.V. (Spanish SEC) and these values correspond to December of the previous year to the IPO.

Table 7.- Level of Underpricing in Spanish IPOs

YEAR	Nº	Initial Return (%)	Initial Market Return (%)	Initial Market-Adjusted Return (%)
1987	3	9,62	-1,02	10,64
1988	2	-7,22	1,95	-9,17
1989	14	13,33	3,52	9,81
1990	8	3,26	-6,25	9,51
1991	7	26,93	3,02	23,91
1992	3	-6,37	-1,94	-4,43
1993	2	5,77	-0,92	6,70
1994	4	7,37	0,25	7,11
1996	4	14,24	1,22	13,02
1997	9	21,50	1,02	20,47
TOTAL	**56**	**12,29**	**0,51**	**11,77**

The table shows the initial returns on Spanish IPOs for each year. Initial returns are measured between the first subscription day and the first trading day. The first column shows initial returns and the third column shows the initial market adjusted returns.

Table 8. Long-run Buy and Hold Return (BHR) on IPOs

Panel A: 12 months BHRs	Equally Weighted Buy and Hold Returns			
	Abnormal Return (%)	T Student	%AR <0	Wealth Ratio
IGBM (N=56)	5,27	0,670	51,79	1,049
BM Equally Weighted Index (N=56)	7,84	0,992	46,43	1,075
Size Portfolio (N=56)	0,12	0,014	53,57	1,001
Book /Market Ratio Portfolio (N=53)	0,38	0,045	52,83	0,993
Book /Market Ratio and Size Portfolio (N=53)	3,54	0,427	52,83	1,021
Control Firms (N=53)	-0,38	-0,253	58,49	0,986

Panel B: 36 months BHRs	Equally Weighted Buy and Hold Returns			
	Abnormal Return (%)	T Student	%AR <0	Wealth Ratio
IGBM (N=56)	-24,19	-1,578	75,61	0,811
BM Equally Weighted Index (N=56)	-14,16	-0,924	73,17	0,880
Size Portfolio (N=56)	-31,11	-2,191**	70,73	0,764
Book /Market Ratio Portfolio (N=53)	-29,55	-1,992*	76,32	0,778
Book /Market Ratio and Size Portfolio (N=53)	-25,82	-1,589	73,68	0,801
Control Firms (N=53)	-23,25	-6,600***	60,53	0,818

Panel C: 60 months BHRs	Equally Weighted Buy and Hold Returns			
	Abnormal Return (%)	T Student	%AR <0	Wealth Ratio
IGBM (N=56)	-23,07	-0,831	76,32	0,843
BM Equally Weighted Index (N=56)	-4,14	-0,148	73,68	0,968
Size Portfolio (N=56)	-33,85	-1,212	78,95	0,785
Book /Market Ratio Portfolio (N=53)	-37,05	-1,202	81,82	0,765
Book /Market Ratio and Size Portfolio (N=53)	-21,27	-0,794	77,14	0,880
Control Firms (N=53)	-30,53	-5,435***	68,57	0,826

The table shows the results of a buy-and-hold strategy on IPOs, after 12, 36 and 60 months from the first day of trading. Long-run returns are computed monthly up to the investment horizon considered (12, 36 and 60 months). Returns are adjusted by the return considered normal, that is alternatively the Madrid Stock Exchange General Index (value weighted index); an equally weighted index; a size portfolio return (size is measured by market value of common equity); a book-to-market portfolio return; a size and book-to-market portfolio return and, finally, control firms return.

***, **, * Statistically significant at the 1%, 5% and 10% level, respectively.

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Table 9.- Five Years Buy and Hold Returns and Wealth Ratios on Spanish IPOs by Cohort Year

Year	Nº	IPOs	Igbm	Equally Weight.	Size	B.M.	Size/ B.M.	Control Firm	Igbm WR	Equally. WR	Size WR	B.M. WR	Size/ B.M. WR	Control Firm WR
1987	3	284,7%	9,1%	-11,8%	66,3%	43,8%	49,1%	10,8%	3,53	4,36	2,31	2,68	2,58	3,47
1988	2	48,6%	-5,6%	-23,1%	-6,5%	13,3%	-10,4%	-63,4%	1,57	1,93	1,59	1,31	1,66	4,06
1989	14	-35,3%	3,0%	-14,8%	-18,0%	12,1%	-8,4%	31,9%	0,63	0,76	0,79	0,58	0,71	0,49
1990	6	-7,9%	14,2%	-7,4%	30,3%	32,1%	-27,0%	-47,1%	0,81	1,00	0,71	0,70	1,26	1,74
1991	6	-16,4%	37,7%	16,6%	41,7%	39,9%	34,0%	132,1%	0,61	0,72	0,59	0,60	0,62	0,36
1992	2	49,4%	134,1%	115,8%	130,3%	180,1%	104,9%	6,5%	0,64	0,69	0,65	0,53	0,73	1,40
1993	2	191,2%	256,7%	245,0%	437,1%	423,6%	478,1%	360,0%	0,82	0,84	0,54	0,56	0,50	0,63
1994	3	34,4%	207,2%	188,3%	226,8%	207,5%	206,3%	135,3%	0,44	0,47	0,41	0,44	0,44	0,57
1996														
1997														
1987 - 1997	38	23,6%	46,6%	27,7%	57,4%	61,5%	40,3%	49,6%	0,84	0,97	0,78	0,77	0,88	0,83

The table shows the returns (in percentage) and the wealth ratios of Spanish IPOs made between 1987 and 1997, after five years of trading. The initial sample consists of 56 firms, but five years estimations are computed for 38 of them, because stock price data are available up to June 2000. After the year and number of IPOs each year, the seven following columns show the result of the estimation of the return on a strategy of buy-and-hold (BHRs) for five years after the IPO, the Madrid Stock Exchange General Index (IGBM), equally-weighted index, a size portfolio return (size is measured by market value of equity)(SIZE); a book-to-market portfolio return (B.M.); a size and book-to-market portfolio return (SIZE / B.M.) and, finally, control firms return (Control Firm). The six final columns show the results of wealth relative ratios (WR) of IPOs in relation to each of the benchmarks mentioned above. Wealth ratios are computed as the average of one plus the return of buy-and-hold IPOs after five years, divided by the average of one plus the return of the different benchmarks in the same investment horizon.

Table 10. Five Years Abnormal Return (Calendar time) on IPOs

Panel A: Equally Weighted	Calendar Time Portfolio Returns		
	Abnormal Return (%)	T Student	Standardized T Student
IGBM (N=56)	0,015	0,029	-1,616
BM Equally Weighted Index (N=56)	0,294	0,595	-0,946
Size Portfolio (N=56)	-0,500	-0,710	-1,558
Book /Market Ratio Portfolio (N=53)	-0,684	-0,855	-1,198
Book /Market Ratio and Size Portfolio (N=53)	-0,054	-0,080	-1,118
Control Firms (N=53)	-0,507	-0,649	-0,826
Panel B: Market Value Weighted	Calendar Time Portfolio Returns		
	Abnormal Return (%)	T Student	Standardized T Student
IGBM (N=56)	1,864	2,347**	1,765*
BM Equally Weighted Index (N=56)	2,032	2,582**	2,448**
Size Portfolio (N=56)	0,892	0,883	0,373
Book /Market Ratio Portfolio (N=53)	1,074	0,984	0,881
Book /Market Ratio and Size Portfolio (N=53)	1,535	1,638	1,164
Control Firms (N=53)	1,789	1,680*	0,078

The table shows the five years calendar time portfolio returns on IPOs from the first day of trading. After setting the five year horizon, the abnormal return on each IPO is computed for each month during the analysed horizon (five years in this case). Abnormal returns are computed in relation to the market index, both market value weighted and equally-weighted market indexes, a size portfolio return (size is measured by market value of equity); a book-to-market portfolio return; a size and book-to-market portfolio return and, finally, control firms return. The following step is to compute the average of each month's abnormal return for each IPO firm in the period considered, obtaining the abnormal return for each month. After that, we calculate the average of all the monthly abnormal returns during the sample period. To test the null hypothesis of zero mean monthly abnormal returns, a t-statistic is calculated using the time-series standard deviation of the mean monthly abnormal returns. A standardized t-student statistic is also computed. This final statistic considers the heteroskedasticity of the portfolio abnormal return due to changes in its composition over time.

***, **, * Statistically significant at the 1%, 5% and 10% level, respectively.

Table 11. Three Years Abnormal Return (Calendar time) on IPOs

Panel A: Equally Weighted	Calendar Time Portfolio Returns		
	Abnormal Return (%)	T Student	Standardized T Student
IGBM (N=56)	0,056	0,100	-1,559
BM Equally Weighted Index (N=56)	0,313	0,598	-1,005
Size Portfolio (N=56)	-0,320	-0,462	-1,687*
Book /Market Ratio Portfolio (N=53)	-0,237	-0,325	-1,104
Book /Market Ratio and Size Portfolio (N=53)	-0,020	-0,030	-1,154
Control Firms (N=53)	-0,328	-0,422	-0,661

Panel B: Market Value Weighted	Calendar Time Portfolio Returns		
	Rentabilidad anormal (%)	T Student	T Student estandarizada
IGBM (N=56)	1,616	2,121**	1,356
BM Equally Weighted Index (N=56)	1,738	2,285**	1,915*
Size Portfolio (N=56)	1,152	1,252	0,037
Book /Market Ratio Portfolio (N=53)	1,447	1,577	0,897
Book /Market Ratio and Size Portfolio (N=53)	1,404	1,579	0,831
Control Firms (N=53)	1,698	1,706*	-0,103

The table shows the three years calendar time portfolio returns on IPOs from the first day of trading. After setting the three year horizon, the abnormal return on each IPO is computed for each month during the analysed horizon (three years in this case). Abnormal returns are computed in relation to the market index, both market value weighted and equally-weighted market indexes, a size portfolio return (size is measured by market value of equity); a book-to-market portfolio return; a size and book-to-market portfolio return and, finally, control firms return. The following step is to compute the average of each month's abnormal return for each IPO firm in the period considered, obtaining the abnormal return for each month. After that, we calculate the average of all the monthly abnormal returns during the sample period. To test the null hypothesis of zero mean monthly abnormal returns, a t-statistic is calculated using the time-series standard deviation of the mean monthly abnormal returns. A standardized t-student statistic is also computed. This final statistic considers the heteroskedasticity of the portfolio abnormal return due to changes in its composition over time.

***, **, * Statistically significant at the 1%, 5% and 10% level, respectively.

Table 12. One Year Abnormal Return (Calendar time) on IPOs

Panel A: Equally Weighted	Calendar Time Portfolio Returns		
	Abnormal Return (%)	T Student	Standardized T Student
IGBM (N=56)	0,568	0,831	1,097
BM Equally Weighted Index (N=56)	0,779	1,201	1,339
Size Portfolio (N=56)	0,069	0,079	-0,960
Book /Market Ratio Portfolio (N=53)	0,182	0,199	-0,145
Book /Market Ratio and Size Portfolio (N=53)	0,368	0,428	0,850
Control Firms (N=53)	0,299	0,304	0,063

Panel B: Market Value Weighted	Calendar Time Portfolio Returns		
	Abnormal Return (%)	T Student	Standardized T Student
IGBM (N=56)	1,582	1,996*	2,097**
BM Equally Weighted Index (N=56)	1,627	2,018**	1,533
Size Portfolio (N=56)	1,231	1,225	0,578
Book /Market Ratio Portfolio (N=53)	1,364	1,334	1,414
Book /Market Ratio and Size Portfolio (N=53)	1,414	1,439	0,285
Control Firms (N=53)	1,717	1,570	0,103

The table shows the one year calendar time portfolio returns on IPOs from the first day of trading. After setting the one year horizon, the abnormal return on each IPO is computed for each month during the analysed horizon (one year in this case). Abnormal returns are computed in relation to the market index, both market value weighted and equally-weighted market indexes, a size portfolio return (size is measured by market value of equity); a book-to-market portfolio return; a size and book-to-market portfolio return and, finally, control firms return. The following step is to compute the average of each month's abnormal return for each IPO firm in the period considered, obtaining the abnormal return for each month. After that, we calculate the average of all the monthly abnormal returns during the sample period. To test the null hypothesis of zero mean monthly abnormal returns, a t-statistic is calculated using the time-series standard deviation of the mean monthly abnormal returns. A standardized t-student statistic is also computed. This final statistic considers the heteroskedasticity of the portfolio abnormal return due to changes in its composition over time.

***, **, * Statistically significant at the 1%, 5% and 10% level, respectively.

Table 13. Long-Run Abnormal Returns (Fama and French) on IPOs

	Equally Weighted	Market Value Weighted
Constant	0,023	0,177
	(0,93)	(1,00)
RMRF	1,091	5,751
	(2,69)***	(2,01)**
SMB	0,573	1,611
	(1,12)	(0,45)
HML	0,120	-0,867
	(0,27)	(-0,28)
Adjusted R²	5,58%	2,76%

The table shows the results of the Fama-French three-factor model. Assuming that the investment horizon to be analysed is five years, we have calculated the monthly return on a portfolio composed of all IPO firms during a period of five years. To determine the return on a portfolio we have used an equally weighted return and also value-weighted return. The dependent variable is simple monthly return on the calendar-time portfolio–either equally weighted or value-weighted (the portfolio is composed of all IPO firms during the last five years). The independent variables are (1) RMRF is the difference between the return on a value-weighted market index and the monthly return on three-month Treasury bills; (2) SMB is the difference in the returns of value-weighted portfolios of small stocks and big stocks, and (3) HML is the difference in the returns of value-weighted portfolios of high book-to-market stocks and low book-to-market stocks.

***, **, * Statistically significant at the 1%, 5% and 10% level, respectively.
In brackets t-statistics are shown

Table 14. Long-Run Performance of IPOs and

the Firm and Offering Characteristics

	BHR5 (1)	BHR5 (2)	BHR3 (3)
C	8,017 (0,347)	-5,469*** (10,388)	-4,897*** (7,353)
ASSETS	-0,242 (0,197)		
ROA	4,549 (0,168)		
ALFA			3,620* (2,582)
OFFER	-0,372 (0,317)		
REPUTATION	-0,850 (0,332)		
LNARI	5,388* (2,821)	5,396* (3,369)	
SEOs	1,313*** (6,360)	1,148*** (7,589)	0,346** (4,644)
-2 Log (L)	19,888	23,135	42,416
Cox and Snell R^2	37,4%	33,4%	16,6%
Nagelkerke R^2	66,3%	59,8%	27,2%
P-value	0,000	0,000	0,006

The table shows the results of the logistic regression analysis using offer characteristics and firm characteristics as independent variables. BHR5 is a dummy variable that takes on a value of 1 if the firm is a winner and 0 if it is a loser, using a 5 year post-IPO window. BHR3 is a dummy variable that takes on a value of 1 if the firm is a winner and 0 if it is a loser, using a 3 year post-IPO window. ASSETS is the natural logarithm of total firm assets in the year before the IPO. ROA is the return on assets in the year before the IPO. ALFA is the number of shares retained by the initial owners. OFFER is the natural logarithm of the actual offering size. REPUTATION: See Table 15. The variable is coded three if the underwriter of the issue is highly experienced (GROUP 1); coded two if it is moderately experienced (GROUP 2) and coded one if neither apply (GROUP 3). LNARI is the natural logarithm of one plus the initial market-adjusted return. SEOs is the number of all seasoned equity offerings made by the firm from the IPO to the end of the sample period.

***, **, * significant at the 1%, 5% and 10% confidence level respectively.
Wald-test values are shown in parentheses.

Table 15.- Ranking of underwriters according to their experience

GROUP	*UNDERWRITER*	*Number of IPOs*
GROUP 1	AB Asesores Bursátiles	6
	Argentaria Bolsa, SVB	5
	Benito y Monjardín	4
	Mercapital, SA y Gescapital	4
GROUP 2	BBV Interactivos SVB	3
	Banco Bilbao-Vizcaya	2
	Banco Hispano Americano	2
	Beta Capital	2
	Central Hispano Bolsa, SVB	2
	SBS España	2
GROUP 3	ABA Agentes de Bolsa Asociados	1
	Banca Catalana	1
	Banca March	1
	Bancapital, Banco Financiero Privado	1
	Banco Central Hispanoamericano	1
	Banco Comercial Atlántico	1
	Banco de Progreso	1
	Banco Popular Español	1
	Banco Urquijo Unión	1
	Bex Capital, SVB	1
	Caja de Ahorros y Monte de Piedad de Barcelona	1
	Infoleasing	1
	Interdealers	1
	Inverbroker, SVB	1
	J Henry Schroder, SV	1
	Mapfre Inversión	1
	Merril Lynch International	1
	Renta 4, Sociedad Instrumental de Agentes de Cambio y Bolsa	1
	SBC Warburg Dillon Read.	1
	The Chase Manhattan Bank, CMB	1